

REMARKS

Response to Examiner's Arguments

The Examiner stated that Applicants' arguments filed on November 3, 2006 have been fully considered but they are not persuasive.

Applicants have clarified the Applicants' arguments of November 3, 2006, and respectfully traverse the Examiner's Response to Arguments.

The relevant claim 1 limitation is:

"a cross-sectional profile of the plate that is substantially constant along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate"

The Examiner states:

"Because applicant's description of the cross-sectional profiles of fig. 3, fig. A, fig. B and fig. C in page 4 of the Remark (*sic*) are not taught by Hawthorne et al."

Applicants have corrected the element numbers in the previously provided Hawthorne FIG. 3 and provided more cross-sectional profiles in FIGs. A-G to assist in better understanding Hawthorne.

The Examiner continues:

"Applicant's cross-sectional profiles are between pins 74a and 74d for cross-sectional profile A, cross-sectional profile through 68 for cross-sectional profile B, and between pins 74b and 74c for cross-sectional profile C."

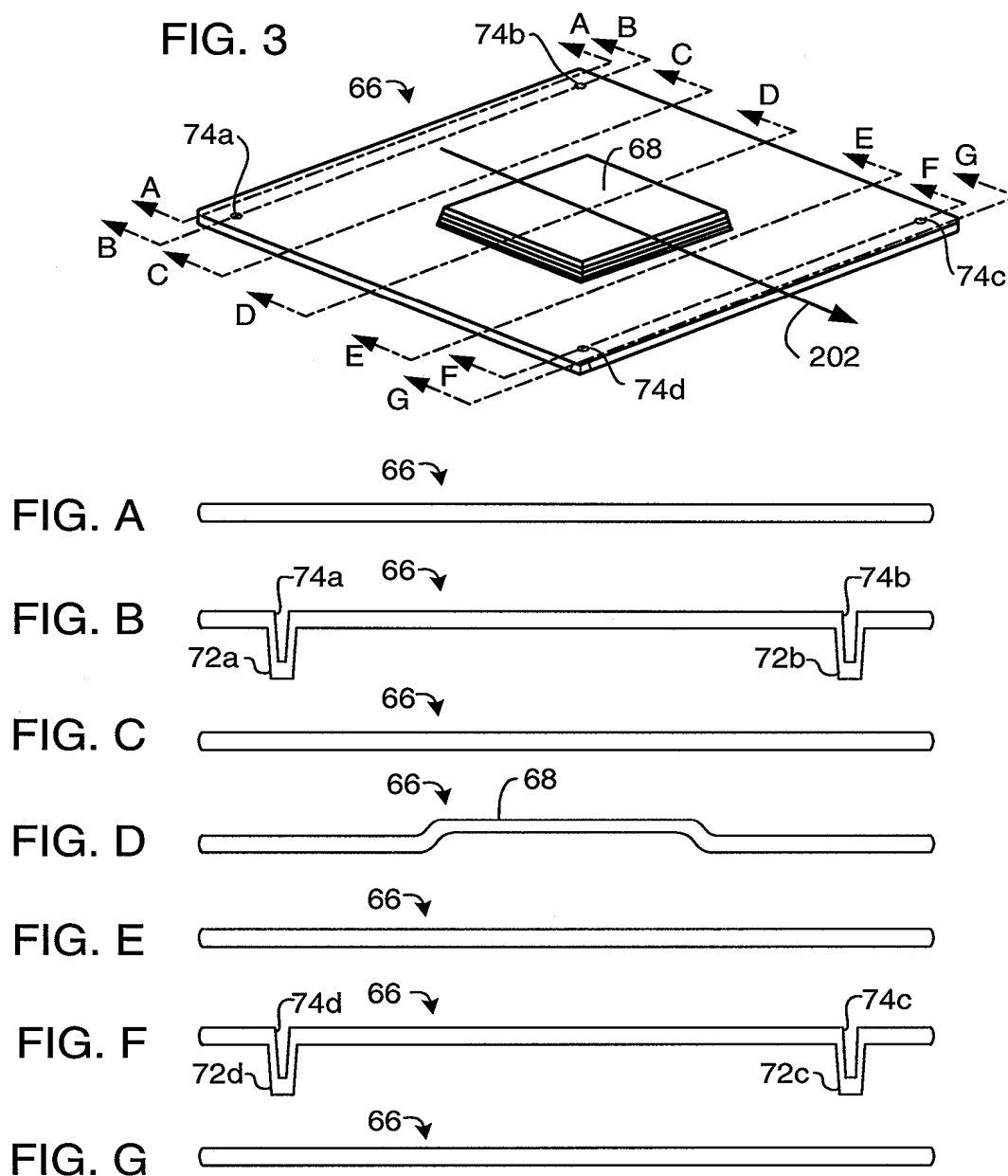
The FIGs. are now correctly labeled so it can be seen that each Hawthorne cross-sectional profile is not substantially constant, but changes.

The Examiner continues:

"However, Hawthorne et al. teaches at figure 4, the cross-sectional profile is between pins 74a/72a to 74b/72b, and with channel 68 between pins 74a/72a and 74b/72b."

While the FIGs. have been clarified, it is obvious from Hawthorne FIG. 3 that the heat spreader 66 is symmetrical regardless of whether the cross-sectional profile is between pins 74a/72a and 74d/72d, 74a/72a and 74b/72b, 74b/72b and 74c/72c, or 74c/72c and 74d/72d.

Thus, it does not make a difference that the cross-sectional profile is taken between different pins than shown in FIG. 4. However, Applicants have provided Hawthorne FIG. 3 with cross-sections taken through Hawthorne FIG. 3 as FIGs. A-G below:



From the above, it is obvious that a Hawthorne cross-sectional profile is shown in FIG. A and that the arrow 202 is a horizontal direction perpendicular to that cross-sectional profile. It is also obvious that the Hawthorne cross-sectional profile changes from FIG. A to FIG. B, from FIG. B to FIG. C, from FIG. C to FIG. D, from FIG. D to FIG. E, from FIG. E to FIG. F, and from FIG. F to FIG. G.

FIG. F, and from FIG. F to FIG. G along the horizontal direction. Even when accounting for scale, one having ordinary skill in the art would not consider the cross-sectional profile to be substantially constant. The Examiner is reminded also that the Examiner's reading is not in conformance with the requirement that:

“Although the PTO must give claims their broadest reasonable interpretation, this interpretation must be consistent with the one that those skilled in the art would reach.” *In re Cortright*, 165 F.3d 1353, 1358 (Fed. Cir. 1999), cited in *In re American Academy of Science Tech Center*, CAFC 03-1531, May 13, 2004.

The Examiner continues:

“Hawthorne et al. also teaches at col. 6, lines 63-67: “It should be noted that the several drawings (all except FIG. 5) are not to scale, showing parts with different relative proportions and dimensions in order to more clearly illustrate significant features. Only FIG. 5 is drawn to correct scale”.

Assuming *arguendo* that Hawthorne FIG. 5 represents a heat spreader at the proper scale, FIG. 5 undermines the Examiner's argument even more than FIG. 4 because the FIG. 5 heat spreader does not have a constant cross-sectional profile and does not even have a constant thickness because it has a thinned out central die receiving section.

The Examiner continues:

“Since, figure 3 is not in scale, hence, the cross-sectional profile of figure 4 is coming from the redrawn figure 3 as shown below having channel 68 formed between pins 74a/72a and 74b/72b and extended to between pins 74d and 74c.”

The scale is not relevant because FIG. 3 discloses changes in cross-sectional profile to those having ordinary skill in the art. To the extent that the remainder of the above comment can be understood, Hawthorne element 68 is not a channel but a central die receiving section, which is raised above the surrounding surface, as shown in Hawthorne FIGs. 4 and 5 and Hawthorne col. 5, lines 30-31.

Further, the Examiner appears to be taking cross-sectional profiles both parallel and perpendicular to a cross-sectional profile without regard to the claimed “horizontal direction that is perpendicular to the cross-sectional profile”. The Examiner is reminded that there is only one cross-sectional profile that the horizontal direction can be perpendicular to since there is an antecedent basis for only one cross-sectional profile in the claim.

The Examiner concludes:

“Therefore, Hawthorne et al. clearly teaches the claimed limitation of a cross-sectional profile of the plate (70) [*sic*] that is substantially constant along at one horizontal direction that is perpendicular to the cross-sectional profile (between pins 74a/72a and 74b/72b) of the plate (70) [*sic*].”

It is respectfully submitted that the conclusion is incorrect and claims 1-10 and 21-30 are allowable under 35 U.S.C. §102(b) as not being anticipated by Hawthorne because:

“Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*” [*emphasis added*] Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co. (730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed Dir. 1983))).

Claim Rejections - 35 USC §102

Claims 1-10 and 21-30 are rejected under 35 U.S.C. §102(b) as being anticipated by Hawthorne et al. (U.S. Patent No. 6,008,991, hereinafter “Hawthorne”).

Hawthorne discloses a packaged integrated circuit with heat spreading standoff support members. An IC device is mounted on a circuit board. Each IC device includes a thin dielectric substrate bearing a plurality of conductive leads. A die is positioned in a hole in the substrate. The die has pads that are bonded to leads carried by the substrate. A circuit board has a thin self-supporting thermally conductive heat spreader. The heat spreader includes fixed standoff and/or alignment pins and a raised central die receiving section.

Regarding claims 1–10 and 21–30, the Applicants respectfully traverse the rejection since the Applicants’ claimed combination, as exemplified in claim 1, includes the limitation of the heat spreader not disclosed in Hawthorne of:

“a cross-sectional profile of the plate that is substantially constant along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate”

The Examiner states in the Office Action dated August 3, 2006:

“a cross-sectional profile of the plate that is substantially constant along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate (see figures 3-4, 9-10)”

However, Hawthorne FIGs. 3-4 and 9-10 show a cross-sectional profile that changes along at least one horizontal direction that is perpendicular to the cross-sectional profile of the Hawthorne heat spreader. As the Hawthorne cross-sectional profile is taken along one direction, it clearly starts off as a thin rectangle, becomes a thin rectangle with two standoff pins (74a and 74d), becomes a thin rectangle, changes to a thin rectangle with a plateau at the central die receiving section (68), becomes a thin rectangle, becomes a thin rectangle with two standoff pins (74b and 74c), and ends as a thin rectangle. Thus, the Hawthorne cross-sectional profile changes along the horizontal direction that is perpendicular to the Hawthorne cross-sectional profile. The Hawthorne cross-sectional profile also changes when it is perpendicular to the thin rectangle with any of the other two standoff pins (74a and 74b, 74b and 74c, or 74c and 74d).

Further, Figures A, B, C, D, E, F, and G above, clearly show that Hawthorne's heat spreader profile is not constant but instead changes significantly in every horizontal direction. Likewise, Hawthorne's written description of the heat spreader 66 fails to disclose forming a cross-sectional profile that is substantially constant in at least one horizontal direction, as explained in Hawthorne column 5, lines 19-31, which states:

“The heat spreader is either molded or stamped in the configuration shown, having a somewhat raised central die receiving section 68 surrounded by lateral sections 70...” [deletions and underlining for clarity]

It is therefore respectfully submitted that independent claims 1, 9, 21, and 29, and the respective claims 2-8, 10, 22-28, and 30, depending therefrom, are not anticipated by Hawthorne under 35 USC §102(b) because:

“Anticipation requires the disclosure in a single prior art reference disclosure of each and every element of the claim under consideration.” *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983) (citing *Soundsciber Corp. v. United States*, 360 F.2d 954, 960, 148 USPQ 298, 301 (Ct. Cl.), *adopted*, 149 USPQ 640 (Ct. Cl. 1966)), *cert. denied*, 469 U.S. 851 (1984). *Carella v. Starlight Archery*, 804 F.2d 135, 138, 231 USPQ 644, 646 (Fed. Cir.), *modified on reh'g*, 1 USPQ 2d 1209 (Fed. Cir. 1986); *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

Withdrawal of the rejection is therefore respectfully requested.

Regarding claims 2–8, 10, 22–28, and 30, these dependent claims each depend from respective independent claims 1, 9, 21, and 29, and are believed to be allowable since they contain all the limitations set forth in the independent claims from which they respectively depend and additionally claim non-obvious combinations thereof. Withdrawal of the rejections of claims 2–8, 10, 22–28, and 30 is therefore respectfully requested because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

Regarding claims 4 and 24, the Applicants also respectfully traverse the rejection since the Applicants' claimed combination includes the limitation not disclosed in Hawthorne of:

“forming an electromagnetic interference shield for the channel”

The Examiner states in the Office Action:

“forming an electromagnetic interference shield for the channel (114, so that the magnetic field won't able to go through the metal shield)”

However, Hawthorne's element 114 is a heat spreader, not an electromagnetic interference shield. In fact, Hawthorne makes no reference to forming an electromagnetic interference shield, nor anywhere uses the terms “electromagnetic”, “interference”, or “shield”. Since there is no disclosure, teaching, or suggestion in Hawthorne of the claimed limitation, the Applicants timely requested an Examiner Affidavit disclosing the Examiner's personal knowledge regarding this limitation pursuant to 37 CFR §1.104(d)(2) (2002). Since the Examiner has failed to adduce any evidence to support the Examiner's position, it is respectfully submitted that the Examiner has failed to establish a *prima facie* case for rejection of claims 4 and 24 under 35 U.S.C. §102(b) because:

“As adapted to *ex parte* procedure, *Graham* [v. John Deere Co.] is interpreted as continuing to place the ‘burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under sections 102 and 103.’” [insertion and underlining for clarity] *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785, 788 (Fed. Cir. 1984), quoting *In re Warner*, 379 F.2d 1011, 154 USPQ 173, 177 (C.C.P.A. 1967), *cert. denied*, 389 U.S. 1057 (1968).

Additionally, the Examiner has failed to comply with MPEP §707.07(f) and *Ex parte Schricker*, 56 USPQ2d 1723 (B.P.A.I. 2000) (unpublished), entitling the Applicants of claims 2 and 24.

Accordingly, it is respectfully submitted that the Applicants are entitled to withdrawal of this rejection and to allowance of claims 4 and 24 per MPEP §707.07(f) and *Ex parte* Schricker. Allowance of claims 4 and 24 is accordingly respectfully requested.

Regarding claims 5, 10, 25, and 30, the Applicants also respectfully traverse the rejection since the Applicants' claimed combination includes the limitation not disclosed in figures 9-10 of Hawthorne of:

“forming...auxiliary heat spreader” [deletions for clarity]

The Examiner states in the Office Action:

“forming...auxiliary heat spreader configured for attachment on top of the semiconductor heat spreader (see figures 9-10).” [deletions for clarity]

However, the structures in figures 9-10 of Hawthorne are shipping trays, not auxiliary heat spreaders (Hawthorne col. 8, lines 28-31). Withdrawal of the rejection is therefore respectfully requested on this ground as well because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

Additionally, the Examiner has not answered the Applicants' prior arguments, repeated just above, concerning this traversed issue, as required by MPEP §707.07(f). Accordingly, it is respectfully submitted that the Applicants are entitled to withdrawal of this rejection and to allowance of claims 5, 10, 25, and 30 per MPEP §707.07(f) and *Ex parte* Schricker, 56 USPQ2d 1723 (B.P.A.I. 2000) (unpublished). Allowance of claims 5, 10, 25, and 30 is accordingly respectfully requested.

Regarding claims 6, 10, 26, and 30, the Applicants also respectfully traverse the rejection since the Applicants' claimed combination includes the limitation not disclosed in Hawthorne of:

“forming attachment means...selected from tabs, locking tabs, deformable sides, side ledges, side clips, clip bosses, center clips, side arms, and a combination thereof.” [deletions for clarity]

The Examiner states in the Office Action:

“forming attachment means...selected from tabs, locking tabs, deformable sides, side ledges, side clips, clip bosses, center clips, side arms, and a combination thereof (legs, 124/126/158/160)” [deletions for clarity]

However, Hawthorne makes no reference to forming attachment means selected from tabs, locking tabs, deformable sides, side ledges, side clips, clip bosses, center clips, side arms, and a combination thereof, nor discloses those of the present invention, as claimed in claims 6, 10, 26, and 30. The legs 124/126/158/160 of Hawthorne cited by the Examiner are legs of the shipping tray sections, not attachment means for an auxiliary heat spreader (Hawthorne col. 8, lines 7-8 and col. 8, line 37). Withdrawal of the rejection is therefore respectfully requested on this ground as well because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

Additionally, the Examiner has not answered the Applicants' prior arguments, repeated just above, concerning this traversed issue, as required by MPEP §707.07(f). Accordingly, it is respectfully submitted that the Applicants are entitled to withdrawal of this rejection and to allowance of claims 6, 10, 26, and 30 per MPEP §707.07(f) and *Ex parte* Schricker, *supra*. Allowance of claims 6, 10, 26, and 30 is accordingly respectfully requested.

Regarding claims 7 and 27–28, the Applicants also respectfully traverse the rejection since the Applicants' claimed combination includes the limitation not disclosed in Hawthorne of:

“form an integral auxiliary heat spreader”

The Examiner states in the Office Action:

“...form an integral auxiliary heat spreader located on top of the panel (see figures 4, 9, 10).” [deletions for clarity]

However, there is no auxiliary structure in figure 4 of Hawthorne, and the structures in FIGs. 9-10 of Hawthorne are shipping trays, not auxiliary heat spreaders, as explained above. Withdrawal of the rejection is therefore respectfully requested on this ground as well because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

Additionally, the Examiner has not answered the Applicants' prior arguments, repeated just above, concerning this traversed issue, as required by MPEP §707.07(f). Accordingly, it is respectfully submitted that the Applicants are entitled to withdrawal of this rejection and to allowance of claims 7 and 27–28 per MPEP §707.07(f) and *Ex parte* Schricker, *supra*. Allowance of claims 7 and 27–28 is accordingly respectfully requested.

Regarding claims 8, 9, 21, and 29, the Applicants also respectfully traverse the rejection since the Applicants' claimed combination includes the limitation not disclosed in Hawthorne of:

“forming the unitary metallic plate in substantially a single metal forming process into a cross-sectional profile that is substantially constant in at least one horizontal direction.”

The Examiner states in the Office Action:

“...forming the unitary metallic plate in substantially a single metal forming process into a cross-sectional profile that is substantially constant in at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate (see figures 3–4, 9–10).” [deletions for clarity]

However, Hawthorne makes no reference to forming a cross-sectional profile that is substantially constant in at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate, nor discloses forming the constant profile of the present invention as claimed in claims 8, 9, 21, and 29. Withdrawal of the rejection is therefore respectfully requested on this ground as well because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

Additionally, the Examiner has not answered the Applicants' prior arguments, repeated just above, concerning this traversed issue, as required by MPEP §707.07(f). Accordingly, it is respectfully submitted that the Applicants are entitled to withdrawal of this rejection and to allowance of claims 8, 9, 21, and 29 per MPEP §707.07(f) and *Ex parte* Schricker, *supra*. Allowance of claims 8, 9, 21, and 29 is accordingly respectfully requested.

Conclusion

In view of the above, it is submitted that the claims are in condition for allowance and reconsideration of the rejections is respectfully requested. Allowance of claims 1-10 and 21-30 at an early date is solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including any extension of time fees, to Deposit Account No. 50-0374 and please credit any excess fees to such deposit account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mikio Ishimaru".

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